

Model Initialization Working Group

1. Imbalance adjustments from analysis time through short-range forecasts.
2. METAR usage in cloud analysis: not using for model initialization purposes due to “pancake” clouds
3. Skin temperature and soil parameters
 - a. Skin temp analysis appears questionable and bad skin temp can cause very bad problems.
 - b. Soil model is incompatible with current generation models. Could Noah be coupled in?
Alternatively, just read in from background model and interpolate to LAPS grid for convenience
4. Removal of clouds, precipitating areas, convection, etc. from background where it has incorrectly generated those features
5. Correcting first guess background fields
 - a. Ensemble methods for covariance?
6. Vertical resolution impacts on balance package
7. Mismatches between LAPS microphysics and model microphysics
8. Documentation on how to link WRF and LAPS. Tips and tricks, etc.
9. Default obs QC thresholds may be too liberal for NWP applications
10. Kalman filter doesn't run (Brent)

Day 2: Recommendations/User Suggestions

1. Start a subgroup for model initialization on the LAPS forum for sharing experiences.
 - a. Tips on visualizing and comparing to model initialization files
 - b. Tips on various issues like earth radius consistency, metgrid/real level dimensions and values, etc.
 - c. Need a better guide to setting weights for various observation types.
2. We would like to see DTC evaluations of LAPS+WRF and perhaps even reference cases. Could leverage HWT spring experiment set of runs (with/without LAPS)
3. Replace gridgen_model with geogrid.exe for better performance, maintainability, and consistency of terrain processing. One option might be to have a switch to have LAPS use either/or. This seems to dovetail with topograbber work.
4. Philosophical and/or science issues:
 - a. What role does local modeling have in the local NWS offices? Local modeling still offers flexibility for local staff to select different physics options, run schedule, have better latency, etc.
 - b. How can LAPS help with national scale modeling, especially as it progresses toward advanced techniques with STMAS?
 - c. Counter to (b), how do we make sure LAPS does not become too complex? It currently offers a much more flexible and maintainable system for offices and agencies that are

not staffed to understand or maintain complex EnKF/4DVAR based systems with large computing systems. 3DVAR/4DVAR techniques make considering remote sensed data “easier” but assume someone has created good forward radiative transfer models. We are excited about the prospect of replacing univariate successive corrections-based analyses with variational approaches, but we need to maintain the simplicity and capabilities that make LAPS unique from the other national/global scale assimilation systems. LAPS advantages:

- i. Straightforward to add new data
 - ii. Computationally efficient
 - iii. Model independent (no need for adjoint models)
- d. How can we get to a place where cycling is possible without the “runaway” error effect?